# DEVELOPMENT AND IMPLEMENTATION OF A PROCESS FOR ANALYZING AND MANAGING VEHICLE AND EQUIPMENT DATA

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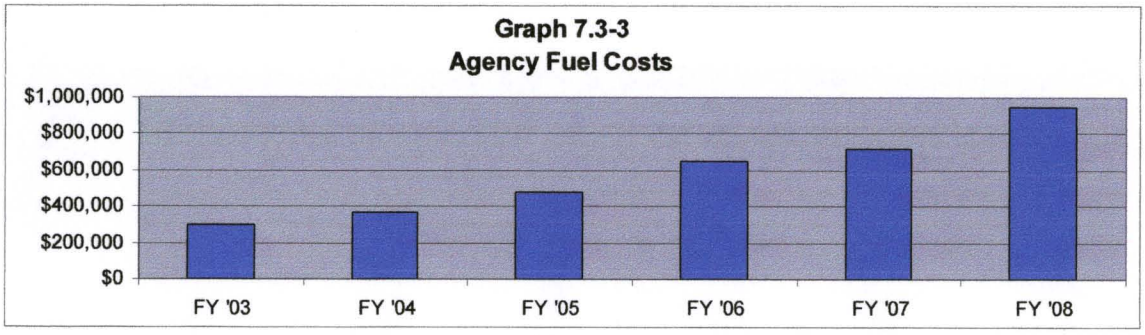
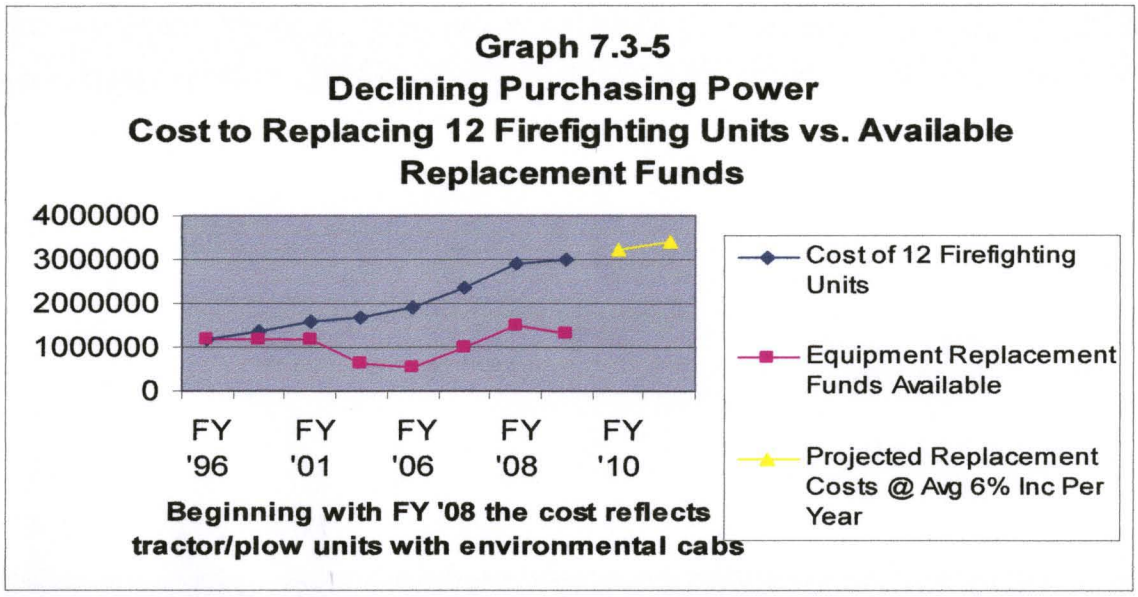
**PROBLEM STATEMENT:**

**Data is currently collected and maintained on agency vehicles and equipment; however, it is not being reviewed and analyzed by management. The development and implementation of such a process may be beneficial in managing our resources and identifying opportunities for cost-savings.**

**Data available for review consists of vehicle/equipment trip logs, monthly vehicle/equipment cost record summaries, reports available through the Commission's Vehicle and Fleet Maintenance Program and reports available through the Mansfield Oil System. Additional data resources to consider are the CADS (Computer Aided Dispatch System) and State Fleet Management.**

**With rising operating costs and budgetary restraints this project could not be timelier. Not only are costs an issue but also the availability of resources. Given that we are an emergency response agency we need to ensure we are prepared to meet the demands of our customers, the citizens of South Carolina. Below are excerpts from the Commission's FY 2008 Accountability Report depicting relative trends.**






**This project goal aligns with both agency and department goals. The mission of the South Carolina Forestry Commission is as follows, "To protect, promote, enhance and nurture the forest lands of South Carolina and educate the public about forestry issues in a manner consistent with achieving the greatest good for its citizens." The Plans and Support Department is responsible for monitoring and reporting on the implementation progress of our agency's Strategic Plan. Additional goals are measuring and analyzing agency performance and identifying opportunities for improvement and making applicable recommendations. It is my goal to select a representative sample of regional vehicle/equipment data for fiscal years 06 – 08 and analyze the information and identify any opportunities to aid in operating more cost-efficiently and cost-effectively.**

**DATA COLLECTION:**

**Before gathering any data, I identified my internal customers. I then developed a brief questionnaire to solicit their input on what information would be beneficial to them in managing their vehicles/equipment and what services Plans**

**and Support and/or the Equipment Maintenance Manager could provide to assist them and add value in their operation. Responses received were summarized and will be used to drive this improvement process. Benchmarking data has also been requested from other southern states and once received will be compared with South Carolina data.**

**In addition, field visits were made to each region to collect information on how vehicle/equipment trip logs and monthly vehicle/equipment cost record summaries are currently utilized around the state as I wanted to gain an understanding of the current processes before proceeding.**

**The following data sets were used in this project:**

1. **number of miles/hours operated monthly/annually**
2. **number of miles per gallon by vehicle type**
3. **fuel cost by vehicle/equipment**
4. **cost per mile driven**
5. **maintenance cost per mile driven**
6. **number of dispatches after normal business hours by vehicle/equipment**

**DATA ANALYSIS:**

**Field visits made to each region confirmed what I already suspected. Trip logs and monthly cost record summaries are not being reviewed and analyzed. In fact, many personnel indicated that I was the first party who has ever asked to see the logs as normally they are just turned in at the conclusion of each fiscal year and retained for the required retention period. Of those I reviewed, there was much variation as to the detail of recordkeeping. In fact, trip logs were not a reliable**

**source of data for purposes of this project. Thus, an opportunity for improvement has been identified and will be addressed as trip logs are required as stated within Section 1-11-270 of the Code of Laws of South Carolina 1976 (See Appendix A).**

**Vehicle and equipment inventory listings were obtained from both State Fleet Management and the Commission's Vehicle and Fleet Maintenance Program. The Commission's listing was utilized in selecting the project sample as State Fleet Management's listing was comprised only of licensed vehicles and did not include equipment such as tractors, etc. A 10% sample of each region's vehicle and equipment inventory was selected for review which resulted in a total of 94 items. However, it was later determined that certain records would not be available for all items in the sample. For example, trip logs and cost record summaries are maintained only on trucks, transports, and tractors not on plows.**

**Where available, monthly cost record summaries for the selected sample were obtained and reviewed. Data was recorded in an Excel spreadsheet and totaled by fiscal year to determine actual miles traveled by vehicle and hours operated by equipment. As with the trip logs, opportunities for improvement exist in the level of detail maintained on the summaries this too will be addressed.**

**The next data set that was examined was fuel cost by vehicle/equipment. This data was generated from the Commission's Vehicle and Fleet Maintenance Program. Fuel purchase information is downloaded on a monthly basis from information generated by the Mansfield Oil System. A table of the results is included in Appendix B. A review of this information by vehicle and equipment type raised some questions. For example, why does some equipment not reflect any**

**fuel charges? Are operators using one fuel card for both the transport and tractor instead of the assigned card for each? If so, this distorts the data. When one begins looking at like items on a statewide level and comparing apples to apples and oranges to oranges exceptions stand out.**

**In Appendix C we take a closer look by reviewing miles per gallon for trucks. For each truck type, average miles per gallon was plotted on a control chart to determine common or special cause variation; each type resulted in common cause variation. Miles per gallon were not reviewed for transports as we have experienced broken odometers in many of them thus the data would not be reliable. It is important to note here that miles per gallon can be impacted by many things such as driving patterns, terrain, proper maintenance, proper tire inflation, weight, etc. In Appendix C we did identify that one of our Ford F-250's receives substantially less miles per gallon than the others. Ironically, the water tank and number of gallons carried in this truck is less than some of the others (See Appendix D). Due to the infrequent purchasing of fuel for tractors, I was unable to calculate hours per gallon. I did attempt to do so for FY 08; however, the data was unbeneficial due to the infrequent purchasing patterns which hampered the calculation process. At times, the calculation process was hampered for miles per gallon as well due to incorrect odometer readings being entered. It is very important for operators to ensure the correct mileage is entered when purchasing fuel.**

**In Appendix E we took a look at our cost per mile to operate. This data was obtained from the Commission's Vehicle and Fleet Maintenance Program and**

**plotted in control charts by truck type to determine common or special cause variation. All but one truck type resulted in common cause variation. With the F-150's we had one data point that resulted in special cause variation. The Commission's Vehicle and Fleet Maintenance Program does not generate reports as to cost per hour as it does for cost per mile.**

**In Appendix F we took a look at our maintenance cost per mile to operate. This data too was obtained from the Commission's Vehicle and Fleet Maintenance Program and plotted in control charts to determine common or special cause variation. All but one truck type resulted in common cause variation. With the F-350's we had one data point that resulted in special cause variation. Again, the Program does not generate reports as to maintenance cost per hour as it does for maintenance cost per mile.**

**Benchmarking data was received from several southern states. Most reported they utilize the same fire-fighting equipment as South Carolina. Some own their equipment as we do while others do a lease-purchase to spread out the expense. While some of our fiscal year reporting periods varied, they all comprised a 12 month period. Of the 5 states reporting, Kentucky was the only state with fuel expenses less than South Carolina (See Appendix G).**

**Section 1-11-270 of the Code of Laws of South Carolina 1976 states the requirements as to the qualifications that must be met regarding permanent assignment of a state vehicle (See Appendix A). According to the Commission's Vehicle and Fleet Maintenance Program, 31 of the vehicles in the selected sample are permanently assigned. For those permanently assigned a state vehicle, CADS**

**(Computer Aided Dispatch System) data was obtained and a comparison made of the percent of after hour dispatches. Based on this data alone, twenty-nine percent of those permanently assigned a state vehicle are dispatched to a fire less than 30% of the time after normal business hours. Given this, management may want to consider looking at the relative fire data and related cost a little closer to better evaluate the cost-benefit and potential risks involved to determine if a change is warranted in the way the Commission does business. Some of the personnel permanently assigned a state vehicle do carry special equipment on their vehicles and can respond in an emergency response capacity; however, they may not be a true "first-responder". Thus, management may want to look at the commuting miles traveled, fuel expenses, maintenance expenses, etc. and compare the actual cost-benefit. In addition, management must consider the potential risk or liability associated with personnel driving agency vehicles.**

**IMPLEMENTATION PLAN:**

**Based on the review of trip logs and cost record summaries, educational sessions are warranted on how to complete these documents. I will conduct these sessions around the state as monthly meetings are held. Where feasible, sessions will be completed before June 30, 2009. During the sessions, personnel will be reminded of the related legal requirements and the importance of proper recordkeeping and how periodic reviews of these documents can be beneficial in managing resources. During these sessions operators will also be reminded of the importance of using the correct fuel cards for the assigned vehicles and equipment and ensuring the correct odometer readings are entered.**

**During staff meetings, I will show management the importance of monitoring and measuring performance on an on-going basis. I will also encourage program managers to do the same. By continually monitoring and measuring, flags may be raised which may lead to opportunities to correct deficiencies and promote cost-savings. For example, monitoring and measuring miles per gallon on like vehicles may signal concerns which need to be addressed via maintenance and/or management of personnel.**

**EVALUATION METHOD:**

**In order to evaluate and determine if the recordkeeping of trip logs and cost record summaries has improved, periodically I will attend monthly meetings in the field and review the documents. Fuel cost reports will be generated quarterly and reviewed on a statewide level. Any concerns noted will be addressed with the appropriate parties.**

**SUMMARY AND RECOMMENDATIONS:**

**Results of this project reiterate the need for a process to analyze and manage the Commission's vehicle and equipment data. As with the trip logs and monthly cost record summaries, the lack of review and analysis gives no one the motivation to record detailed, accurate and legible information. Management at all levels needs to realize the importance here as no one knows when documents may be requested or by whom. As stated previously the trip logs themselves are required per Section 1-11-270 of the Code of Laws of South Carolina 1976. Such documents should be reviewed monthly by management to ensure information recorded is detailed,**

**accurate and legible. In addition, management needs to address and determine if the trip log data is valuable for their data and analysis purposes.**

**It is recommended that regional personnel develop an Excel spreadsheet and record data from the monthly cost record summaries by vehicle and equipment for each month by fiscal year. Doing so, allows them to see and compare miles traveled, hours operated, and related expenses. Such process should be beneficial to all departments who have vehicles and equipment as by monitoring and measuring performance on an on-going basis flags may be raised which can lead to opportunities to correct deficiencies and promote cost-savings.**

**While the Commission utilizes a Vehicle and Fleet Maintenance Program, it is not user-friendly and does not meet all of our reporting needs due to the nature of our business versus that of the Department of Health and Environmental Control for which the Program was designed. The Budget and Control Board and State Fleet Management has recently awarded a contract for a new Fleet Maintenance System in hopes that all state agencies will use and record and report the same data. Thus, it is my recommendation that the SC Forestry Commission do just that. I previously served as a panel member on the Request for Proposals Evaluation Panel for this new system and feel it should meet the Commission's needs.**

**Each month regional personnel receive a monthly transaction report generated from the Mansfield Oil System. This report can be utilized to calculate miles per gallon for their respective vehicles and equipment. I recommend that they begin performing the calculations at the local level. Such report will be made available no later than the 5$^{th}$ of the following month and assistance provided as**

**requested. Monitoring and measuring performance on an on-going basis can reveal opportunities for improvement and/or reveal operations are running cost-effectively and cost-efficiently. Regardless, in these stringent budgetary times we all need to be cognizant of any and all opportunities to generate cost savings for our agencies.**

## APPENDIX A

**SECTION 1-11-270. Division of Motor Vehicle Management; establishment of criteria for individual assignment of motor vehicles.**

(A) The board shall establish criteria for individual assignment of motor vehicles based on the functional requirements of the job, which shall reduce the assignment to situations clearly beneficial to the State. Only the Governor, statewide elected officials, and agency heads are provided a state-owned vehicle based on their position.

(B) Law enforcement officers, as defined by the agency head, may be permanently assigned state-owned vehicles by their respective agency head. Agency heads may assign a state-owned vehicle to an employee when the vehicle carries or is equipped with special equipment needed to perform duties directly related to the employee's job, and the employee is either in an emergency response capacity after normal working hours or for logistical reasons it is determined to be in the agency's interest for the vehicle to remain with the employee. No other employee may be permanently assigned to a state-owned vehicle, unless the assignment is cost advantageous to the State under guidelines developed by the State Fleet Manager. Statewide elected officials, law enforcement officers, and those employees who have been assigned vehicles because they are in an emergency response capacity after normal working hours are exempt from reimbursing the State for commuting miles. Other employees operating a permanently assigned vehicle must reimburse the State for commuting between home and work.

(C) All persons, except the Governor and statewide elected officials, permanently assigned with automobiles shall log all trips on a log form approved by the board, specifying beginning and ending mileage and job function performed. However, trip logs must not be maintained for vehicles whose gross vehicle weight is greater than ten thousand pounds nor for vehicles assigned to full-time line law enforcement officers. Agency directors and commissioners permanently assigned state vehicles may utilize exceptions on a report denoting only official and commuting mileage in lieu of the aforementioned trip logs.

**APPENDIX B**
**Table of Fuel Expenses by Vehicle**

| Decal | Year | Make & Model | FY 06 | FY 07 | FY 08 |
|---|---|---|---|---|---|
| 11689 | 1997 | Ford F-150 | $1,358.56 | $1,053.70 | $2,627.05 |
| 11691 | 1997 | Ford F-150 | $1,875.14 | $2,616.47 | $3,911.14 |
| 11777 | 1997 | Ford F-150 | $1,236.58 | $1,156.88 | $4,075.56 |
| 11910 | 1998 | Ford F-150 | $3,040.94 | $3,157.35 | $4,446.22 |
| 11931 | 1998 | Ford F-150 | $2,845.05 | $2,676.94 | $1,511.28 |
| 13046 | 2005 | Ford F-150 | $3,854.05 | $1,800.43 | $5,613.49 |
| 13083 | 2005 | Ford F-150 | $3,671.76 | $4,070.78 | $5,336.65 |
| 13213 | 2006 | Ford F-150 | $2,214.53 | $4,382.55 | $5,875.40 |
| 13334 | 2007 | Ford F-150 | N/A | $ 485.14 | $5,507.85 |
| 12405 | 2001 | Ford F-250 | $3627.08 | $4,365.71 | $5,124.85 |
| 12416 | 2001 | Ford F-250 | $4104.45 | $3,857.85 | $5,088.22 |
| 13321 | 2008 | Ford F-250 | N/A | N/A | $6,241.29 |
| 13322 | 2008 | Ford F-250 | N/A | N/A | $4,708.82 |
| 13323 | 2008 | Ford F-250 | N/A | N/A | $5,517.54 |
| 13324 | 2008 | Ford F-250 | N/A | N/A | $9,263.17 |
| 13325 | 2008 | Ford F-250 | N/A | N/A | $3,168.22 |
| 13326 | 2008 | Ford F-250 | N/A | N/A | $2,452.77 |
| 13327 | 2008 | Ford F-250 | N/A | N/A | $3,734.91 |
| 13328 | 2008 | Ford F-250 | N/A | N/A | $4,487.17 |
| 11780 | 1997 | Ford F-350 | $2,977.08 | $4,011.18 | $5,073.18 |
| 11781 | 1997 | Ford F-350 | $ 856.61 | $1,081.73 | $4,119.29 |
| 11783 | 1997 | Ford F-350 | $3,115.32 | $3,225.91 | $4,824.67 |
| 13333 | 2008 | Ford F-350 | N/A | $ 98.90 | $8,952.23 |
| 12107 | 1999 | International | $1,224.45 | $1,833.61 | $2,452.24 |
| 12109 | 1999 | International | $2,199.12 | $2,187.67 | $3,035.37 |
| 12113 | 1998 | International | $ 949.67 | $1,017.92 | $1,108.62 |
| 12114 | 2000 | International | $ 708.30 | $ 895.23 | $1,615.30 |
| 12118 | 1999 | International | $ 492.03 | $ 633.54 | $1,212.23 |
| 12122 | 2000 | International | $ 339.55 | $2,441.42 | $3,222.68 |
| 12124 | 2000 | International | $ 952.81 | $2,248.04 | $2,157.36 |
| 12125 | 2000 | International | $1,849.15 | $2,178.60 | $2,169.04 |

**APPENDIX B**
**Table of Fuel Expenses by Equipment**

| Decal | Year | Make & Model | FY 06 | FY 07 | FY 08 |
|---|---|---|---|---|---|
| 12718 | 2003 | Dresta TD8H-DD | $ 285.79 | $ 264.55 | $ 410.79 |
| 12643 | 2002 | Dresta TD8H-DD | $ 234.07 | $ 222.41 | $ 331.65 |
| 12642 | 2002 | Dresta TD8H-DD | $ 246.80 | $ 281.48 | $ 683.27 |
| 12641 | 2002 | Dresta TD8H-DD | | $ 133.80 | $ 459.81 |
| 12640 | 2002 | Dresta TD8H-DD | $ 166.75 | $ 216.98 | |
| 12638 | 2002 | Dresta TD8H-DD | | | |
| 12637 | 2002 | Dresta TD8H-DD | $ 212.81 | $ 266.45 | $ 321.75 |
| 12436 | 2001 | Dresta TD8H-DD | $ 238.70 | $ 152.51 | $ 220.46 |
| 12435 | 2001 | Dresta TD8H-DD | $ 319.33 | $ 282.15 | $ 332.35 |
| 12434 | 2001 | Dresta TD8H-DD | $ 485.35 | $ 461.61 | $ 543.14 |
| 12433 | 2001 | Dresta TD8H-DD | $ 291.62 | $ 221.58 | $ 425.88 |
| 12430 | 2001 | Dresta TD8H-DD | $ 548.07 | $ 272.52 | $ 656.10 |
| 12429 | 2001 | Dresta TD8H-DD | $ 202.16 | $ 298.30 | $ 136.06 |
| 12428 | 2001 | Dresta TD8H-DD | $ 302.97 | $ 211.10 | $ 166.93 |
| 12427 | 2001 | Dresta TD8H-DD | $ 140.25 | $ 214.15 | $ 186.80 |
| 12426 | 2001 | Dresta TD8H-DD | $ 56.42 | $ 341.56 | $ 376.18 |
| 12424 | 2001 | Dresta TD8H-DD | $ 217.61 | $ 669.05 | $ 761.08 |
| 12423 | 2001 | Dresta TD8H-DD | $ 272.57 | $ 364.91 | $ 369.47 |
| 12421 | 2001 | Dresta TD8H-DD | $ 182.18 | $ 377.65 | $ 512.35 |
| 12420 | 2001 | Dresta TD8H-DD | $ 471.71 | $ 302.49 | $ 281.33 |
| 12711 | 2003 | Dresta TD9H | $ 272.98 | $ 315.12 | $ 422.10 |
| 12712 | 2003 | Dresta TD9H | $ 279.78 | $ 850.71 | $ 930.41 |

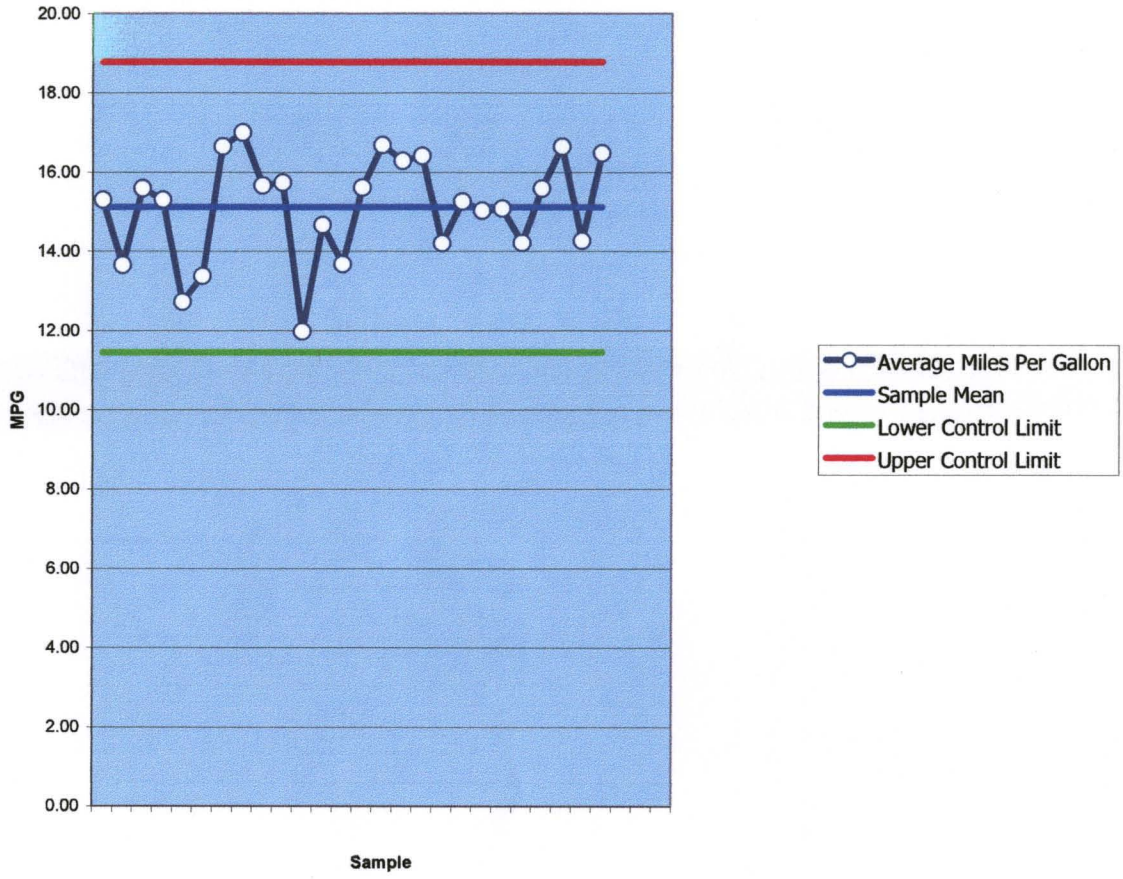
**APPENDIX B**
**Table of Fuel Expenses by Equipment**

| Decal | Year | Make & Model | FY 06 | FY 07 | FY 08 |
|---|---|---|---|---|---|
| 10974 | 1994 | JD 450G | $ 111.51 | $ 173.68 | $ 37.08 |
| 11154 | 1996 | JD 450G | $ 108.03 | $ 476.65 | $ 294.72 |
| 11156 | 1996 | JD 450G | $ 382.17 | $ 345.63 | $ 586.84 |
| 11159 | 1996 | JD 450G | $ 378.24 | $ 213.50 | $ 548.57 |
| 11163 | 1996 | JD 450G | $ 366.26 | $ 394.68 | $ 639.48 |
| 11166 | 1996 | JD 450G | $ 136.59 | $ 207.43 | $ 286.59 |
| 11168 | 1996 | JD 450G | $ 342.89 | $ 321.84 | $ 461.18 |
| 11171 | 1996 | JD 450G | $ 64.87 | $ 472.35 | $ 996.08 |
| 11173 | 1996 | JD 450G | $ 495.03 | $ 391.62 | $1,114.85 |
| 11175 | 1996 | JD 450G | $ 164.77 | $ 157.32 | $ 778.08 |
| 11177 | 1996 | JD 450G | $ 165.31 | $ 445.40 | $ 165.71 |
| 11179 | 1996 | JD 450G | $ 194.26 | $ 283.86 | $ 650.35 |
| 11181 | 1996 | JD 450G | $ 213.80 | $ 215.54 | $ 359.57 |
| 11185 | 1996 | JD 450G | $ 244.94 | $ 347.82 | $ 324.51 |
| 11189 | 1996 | JD 450G | $ 217.21 | $ 158.04 | $ 25.16 |
| 11190 | 1996 | JD 450G | $ 245.10 | $ 259.44 | $ 555.24 |
| 11194 | 1996 | JD 450G | $ 356.08 | $ 124.19 | $ 282.82 |
| 11195 | 1996 | JD 450G | $ 436.59 | $ 617.71 | $ 483.97 |
| 13060 | 2005 | JD 550J | $ 226.54 | $ 419.85 | $ 610.30 |
| 13061 | 2005 | JD 550J | $ 350.14 | $ 548.49 | $ 783.91 |
| 13062 | 2005 | JD 550J | $ 327.23 | $ 522.81 | $ 746.95 |
| 13063 | 2005 | JD 550J | $ 556.66 | $ 508.23 | $ 567.16 |
| 13065 | 2005 | JD 550J | $ 780.51 | $1,021.84 | $1,119.09 |
| 13066 | 2005 | JD 550J | $ 552.44 | $ 294.10 | $ 766.00 |
| 13067 | 2005 | JD 550J | $ 635.78 | $ 694.65 | $1,502.19 |
| 13200 | 2006 | JD 550J | N/A | $ 889.88 | $ 897.62 |
| 13201 | 2006 | JD 550J | N/A | $ 778.91 | $ 920.35 |

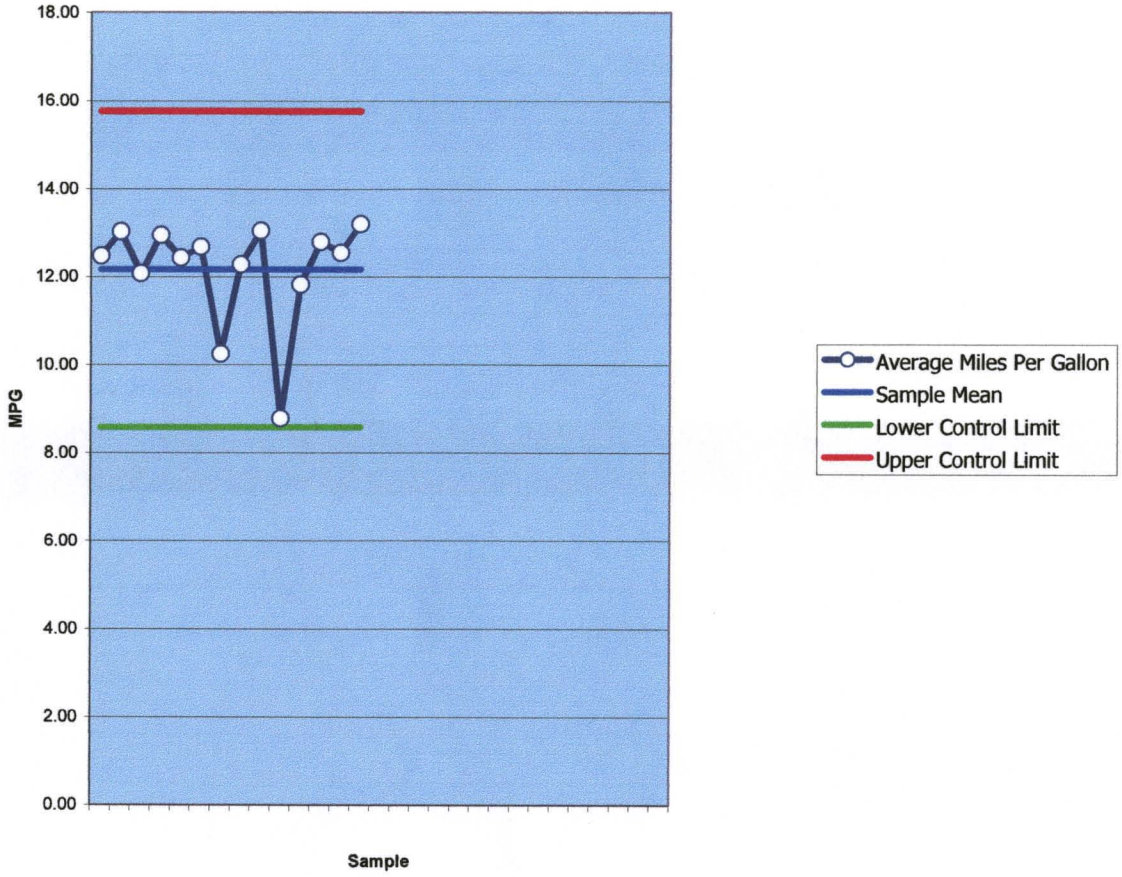
**APPENDIX C**
**Miles per Gallon**

| Decal | Year | Make & Model | Average FY 06 | Average FY 07 | Average FY 08 |
|---|---|---|---|---|---|
| 11689 | 1997 | Ford F-150 | 15.31 | 15.67 | 14.21 |
| 11691 | 1997 | Ford F-150 | 13.66 | 15.74 | 15.27 |
| 11777 | 1997 | Ford F-150 | 15.60 | 11.98 | 15.03 |
| 11910 | 1998 | Ford F-150 | 15.31 | 14.67 | 15.09 |
| 11931 | 1998 | Ford F-150 | 12.73 | 13.68 | 14.22 |
| 13046 | 2005 | Ford F-150 | 13.38 | 15.62 | 15.60 |
| 13083 | 2005 | Ford F-150 | 16.65 | 16.69 | 16.65 |
| 13213 | 2006 | Ford F-150 | 17.00 | 16.29 | 14.27 |
| 13334 | 2007 | Ford F-150 | N/A | 16.41 | 16.49 |
| 12405 | 2001 | Ford F-250 | 12.48 | 12.08 | 12.43 |
| 12416 | 2001 | Ford F-250 | 13.03 | 12.95 | 12.68 |
| 13321 | 2008 | Ford F-250 | N/A | N/A | 10.25 |
| 13322 | 2008 | Ford F-250 | N/A | N/A | 12.28 |
| 13323 | 2008 | Ford F-250 | N/A | N/A | 13.05 |
| 13324 | 2008 | Ford F-250 | N/A | N/A | 8.78 |
| 13325 | 2008 | Ford F-250 | N/A | N/A | 11.83 |
| 13326 | 2008 | Ford F-250 | N/A | N/A | 12.80 |
| 13327 | 2008 | Ford F-250 | N/A | N/A | 12.55 |
| 13328 | 2008 | Ford F-250 | N/A | N/A | 13.20 |
| 11780 | 1997 | Ford F-350 | 11.03 | 11.36 | 11.26 |
| 11781 | 1997 | Ford F-350 | 13.02 | 13.43 | 13.52 |
| 11783 | 1997 | Ford F-350 | 13.18 | 13.29 | 13.46 |
| 13333 | 2008 | Ford F-350 | N/A | N/A | 10.26 |
| 13450 | 2008 | Ford F-350 | N/A | N/A | N/A |
| 13457 | 2008 | Ford F-350 | N/A | N/A | N/A |
| 13458 | 2008 | Ford F-350 | N/A | N/A | N/A |

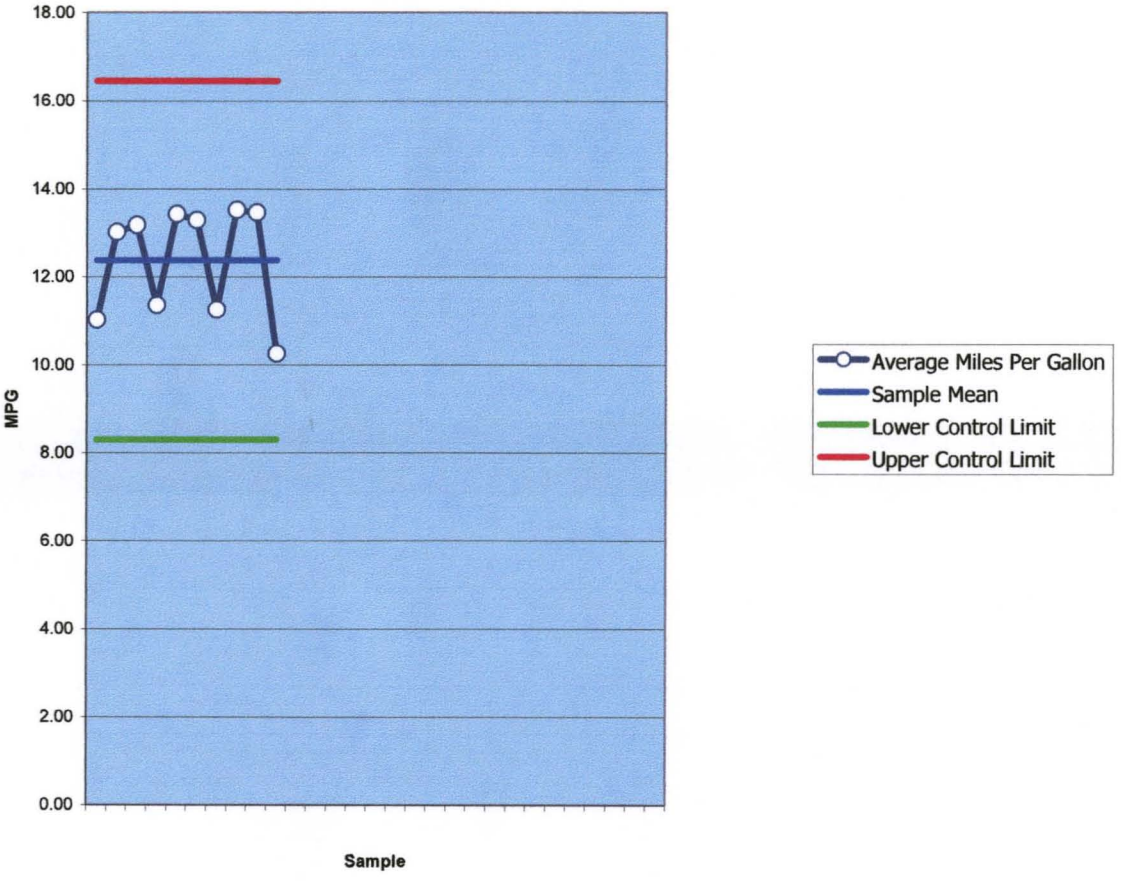
**Appendix C**
**F-150 Miles per Gallon (FY 2006 - FY 2008)**



**Appendix C**
**F-250 Miles per Gallon (FY 2006 - FY 2008)**



**Appendix C**
**F-350 Miles per Gallon (FY 2006 - FY 2008)**



**APPENDIX D**
**Water Tanks - Capacity & Gallons Carried**

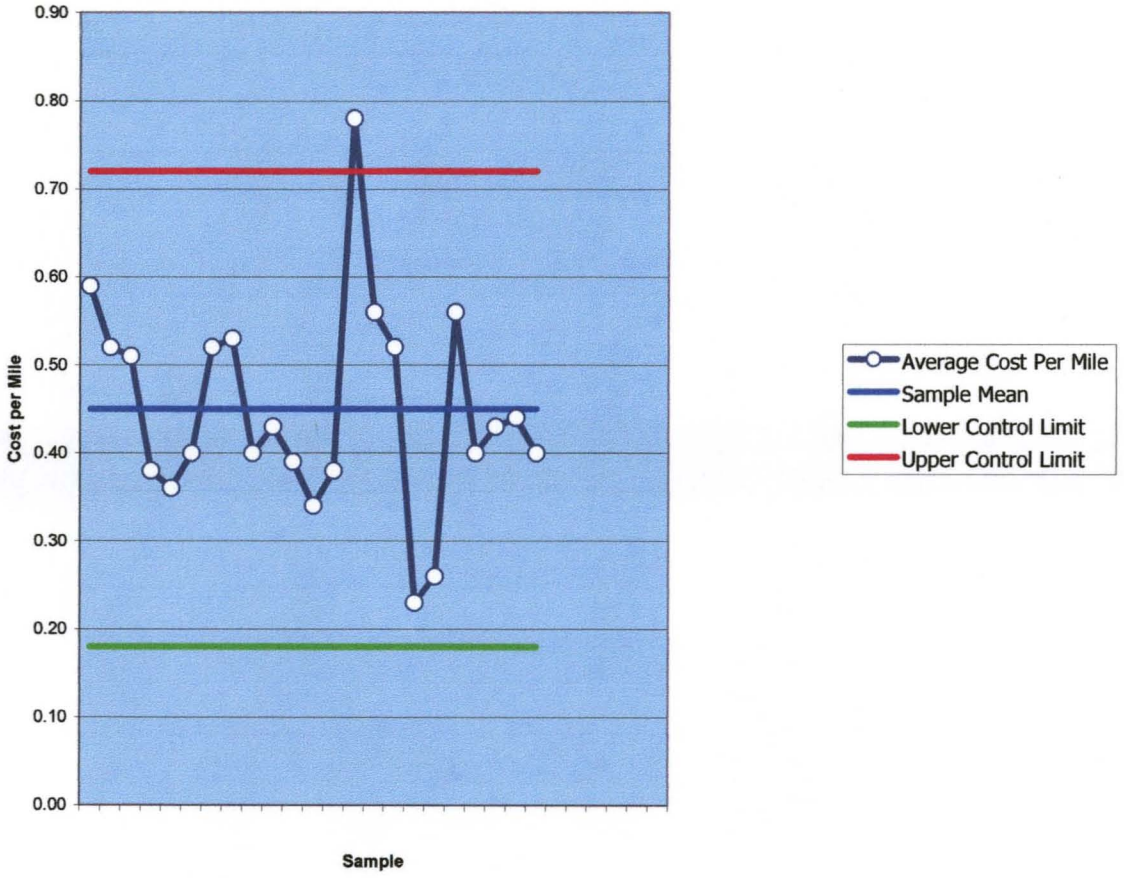
| Decal | Year | Make & Model | Water Tank | Tank Capacity | Quantity Carried |
|---|---|---|---|---|---|
| 11689 | 1997 | Ford F-150 | N | N/A | N/A |
| 11691 | 1997 | Ford F-150 | Y | 100 gal. | 100 gal. |
| 11777 | 1997 | Ford F-150 | Y | 100 gal. | 100 gal. |
| 11910 | 1998 | Ford F-150 | Y | 100 gal. | 100 gal. |
| 11931 | 1998 | Ford F-150 | Y | 100 gal. | UNKNOWN |
| 13046 | 2005 | Ford F-150 | N | N/A | N/A |
| 13083 | 2005 | Ford F-150 | N | N/A | N/A |
| 13213 | 2006 | Ford F-150 | N | N/A | N/A |
| 13334 | 2007 | Ford F-150 | N | N/A | N/A |
| 12405 | 2001 | Ford F-250 | Y | 100 gal. | 100 gal. |
| 12416 | 2001 | Ford F-250 | N | N/A | N/A |
| 13321 | 2008 | Ford F-250 | Y | 200 gal. | 200 gal. |
| 13322 | 2008 | Ford F-250 | Y | 145 gal. | 100 gal. |
| 13323 | 2008 | Ford F-250 | Y | 200 gal. | 200 gal. |
| 13324 | 2008 | Ford F-250 | Y | 150 gal. | 150 gal. |
| 13325 | 2008 | Ford F-250 | Y | 100 gal. | 100 gal. |
| 13326 | 2008 | Ford F-250 | Y | UNKNOWN | UNKNOWN |
| 13327 | 2008 | Ford F-250 | Y | UNKNOWN | UNKNOWN |
| 13328 | 2008 | Ford F-250 | Y | UNKNOWN | UNKNOWN |
| 11780 | 1997 | Ford F-350 | N | N/A | N/A |
| 11781 | 1997 | Ford F-350 | N | N/A | N/A |
| 11783 | 1997 | Ford F-350 | UNKNOWN | UNKNOWN | UNKNOWN |
| 13333 | 2008 | Ford F-350 | N | N/A | N/A |
| 13450 | 2008 | Ford F-350 | Y | 200 gal. | 200 gal. |
| 13457 | 2008 | Ford F-350 | Y | 200 gal. | 200 gal. |
| 13458 | 2008 | Ford F-350 | Y | UNKNOWN | UNKNOWN |

## APPENDIX E
### Cost per Mile

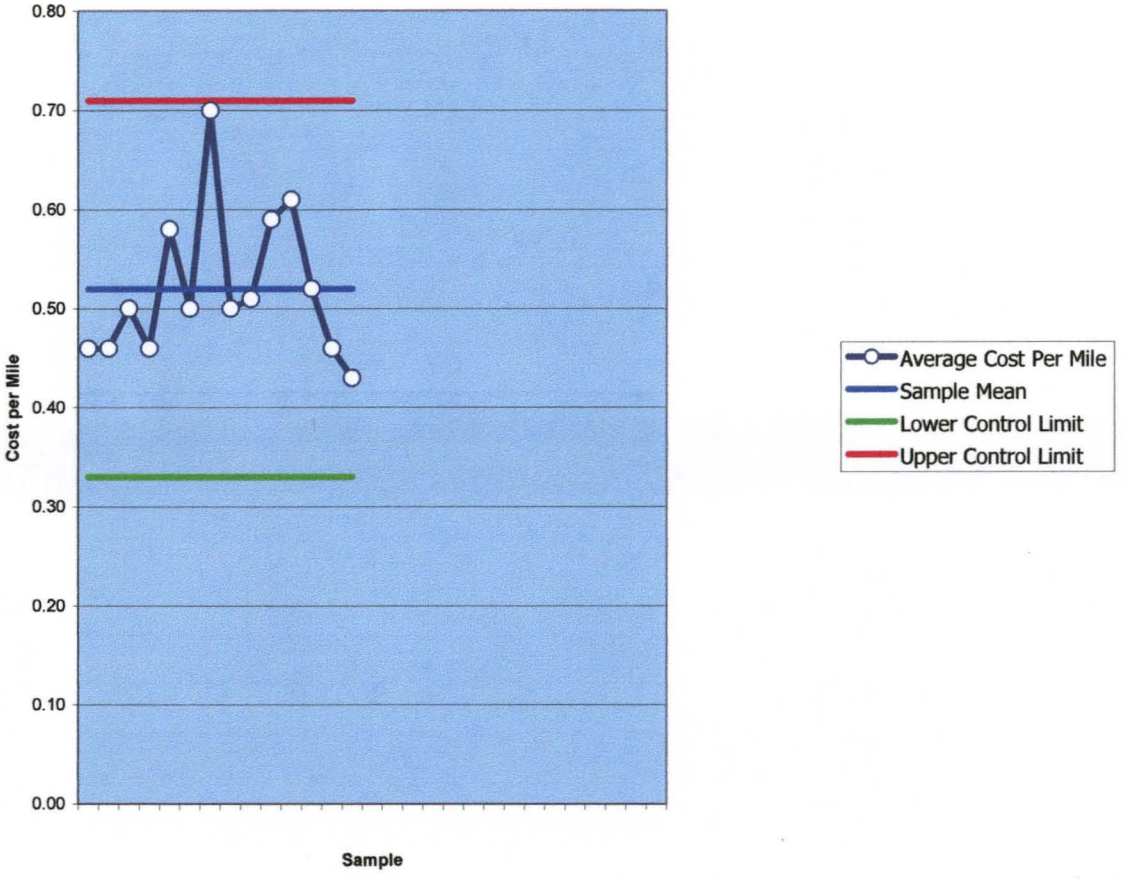
| Decal | Year | Make & Model | Cost/Mile FY 06 | Cost/Mile FY 07 | Cost/Mile FY 08 |
|---|---|---|---|---|---|
| 11689 | 1997 | Ford F-150 | 0.59 | 0.52 | 0.56 |
| 11691 | 1997 | Ford F-150 | 0.52 | 0.53 | 0.52 |
| 11777 | 1997 | Ford F-150 | 2,225.62 | 0.40 | 0.23 |
| 11910 | 1998 | Ford F-150 | 0.51 | 4,707.12 | 0.26 |
| 11931 | 1998 | Ford F-150 | 5,253.76 | 0.43 | 0.56 |
| 13046 | 2005 | Ford F-150 | 0.38 | 0.39 | 0.40 |
| 13083 | 2005 | Ford F-150 | 0.36 | 0.34 | 0.43 |
| 13213 | 2006 | Ford F-150 | 0.40 | 0.38 | 0.44 |
| 13334 | 2007 | Ford F-150 | 0.00 | 0.78 | 0.40 |
| 12405 | 2001 | Ford F-250 | 0.46 | 0.50 | 0.58 |
| 12416 | 2001 | Ford F-250 | 0.46 | 0.46 | 0.50 |
| 13321 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.70 |
| 13322 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.50 |
| 13323 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.51 |
| 13324 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.59 |
| 13325 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.61 |
| 13326 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.52 |
| 13327 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.46 |
| 13328 | 2008 | Ford F-250 | 0.00 | 0.00 | 0.43 |
| 11780 | 1997 | Ford F-350 | 0.72 | 0.82 | 0.82 |
| 11781 | 1997 | Ford F-350 | 2.08 | 1.31 | 0.64 |
| 11783 | 1997 | Ford F-350 | 0.60 | 0.61 | 0.66 |
| 13333 | 2008 | Ford F-350 | 0.00 | 98.90 | 0.63 |
| 13450 | 2008 | Ford F-350 | 0.00 | 0.00 | 0.00 |
| 13457 | 2008 | Ford F-350 | 0.00 | 0.00 | 0.00 |
| 13458 | 2008 | Ford F-350 | 0.00 | 0.00 | 0.00 |

* No miles traveled in system during the FY

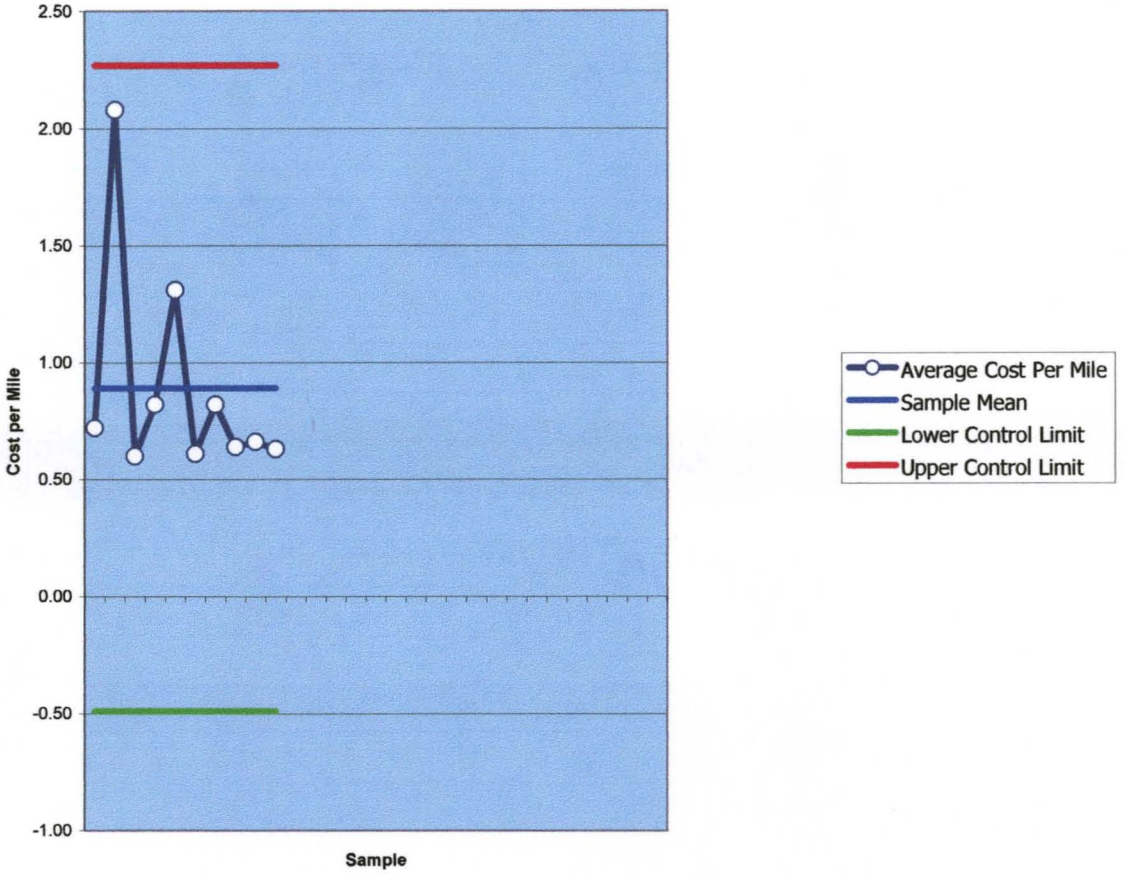
**Appendix E**
**F-150 Cost per Mile (FY 2006 - FY 2008)**



**Appendix E**
**F-250 Cost per Mile (FY 2006 - FY 2008)**



**Appendix E**
**F-350 Cost per Mile (FY 2006 - FY 2008)**

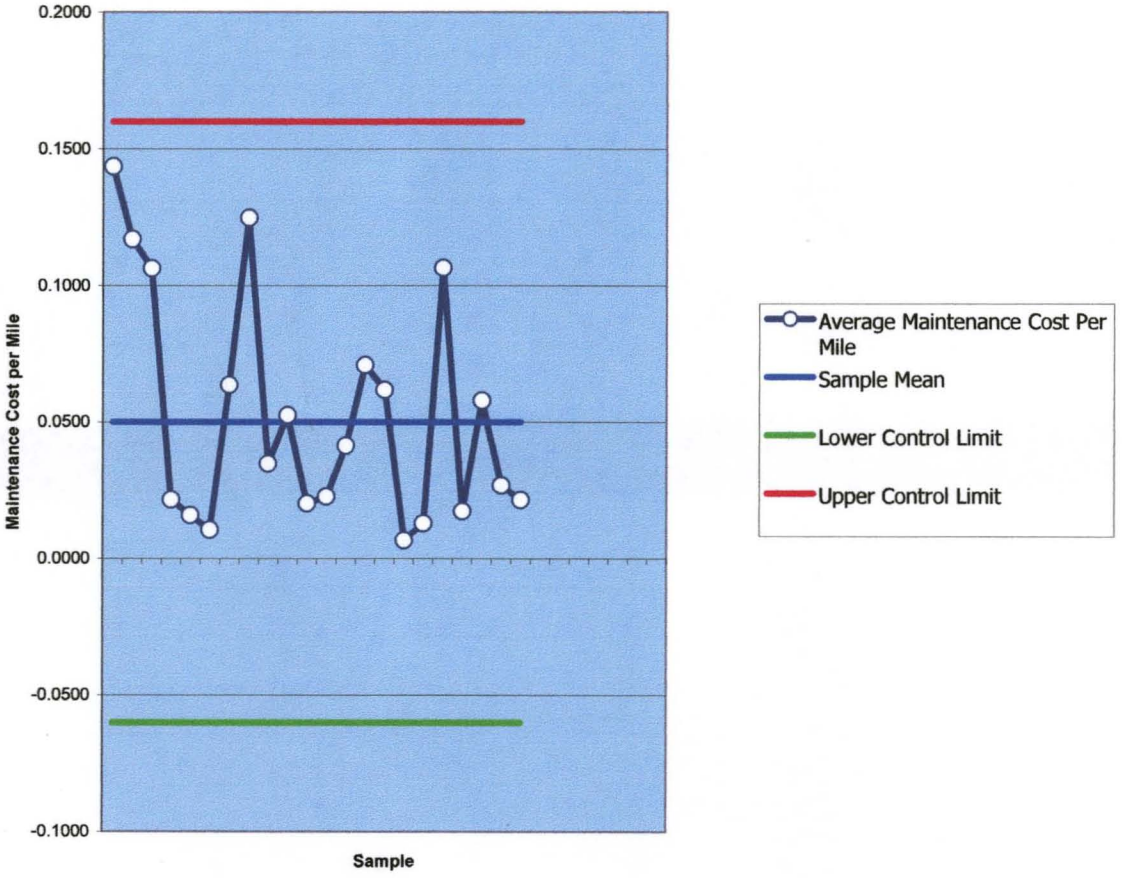


## APPENDIX F
### Maintenance Cost per Mile

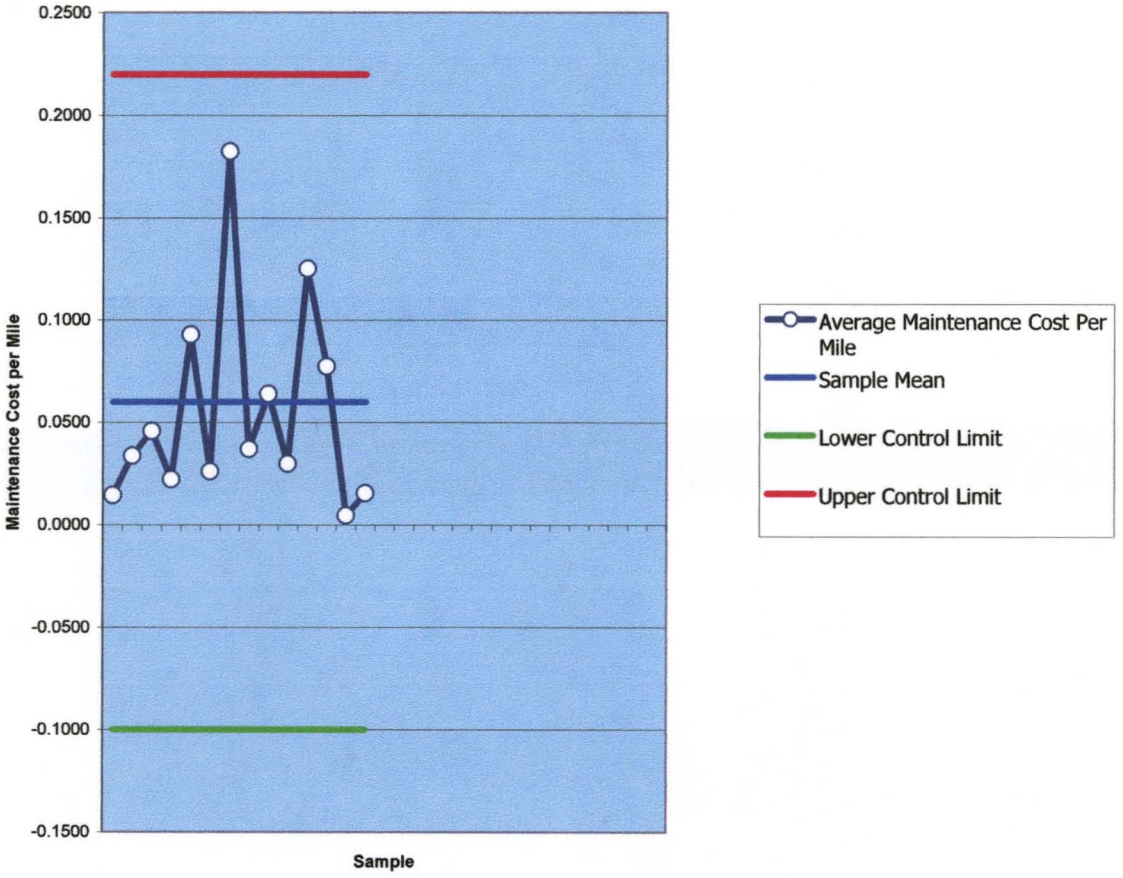
| Decal | Year | Make & Model | Maint. Cost/Mile | Maint. Cost/Mile | Maint. Cost/Mile |
|---|---|---|---|---|---|
| 11689 | 1997 | Ford F-150 | 0.1436 | 0.0636 | 0.0708 |
| 11691 | 1997 | Ford F-150 | 0.117 | 0.1248 | 0.0617 |
| 11777 | 1997 | Ford F-150 | 638.04 | 0.0348 | 0.0068 |
| 11910 | 1998 | Ford F-150 | 0.1063 | 1198.77 | 0.0129 |
| 11931 | 1998 | Ford F-150 | 2057.71 | 0.0525 | 0.1065 |
| 13046 | 2005 | Ford F-150 | 0.0216 | 0.0202 | 0.0174 |
| 13083 | 2005 | Ford F-150 | 0.0159 | 0.0227 | 0.0579 |
| 13213 | 2006 | Ford F-150 | 0.0105 | 0.0414 | 0.0268 |
| 13334 | 2007 | Ford F-150 | 0 | 0 | 0.0215 |
| 12405 | 2001 | Ford F-250 | 0.0145 | 0.0457 | 0.0929 |
| 12416 | 2001 | Ford F-250 | 0.0337 | 0.0222 | 0.0261 |
| 13321 | 2008 | Ford F-250 | 0 | 0 | 0.1823 |
| 13322 | 2008 | Ford F-250 | 0 | 0 | 0.037 |
| 13323 | 2008 | Ford F-250 | 0 | 0 | 0.064 |
| 13324 | 2008 | Ford F-250 | 0 | 0 | 0.0299 |
| 13325 | 2008 | Ford F-250 | 0 | 0 | 0.1252 |
| 13326 | 2008 | Ford F-250 | 0 | 0 | 0.0774 |
| 13327 | 2008 | Ford F-250 | 0 | 0 | 0.0046 |
| 13328 | 2008 | Ford F-250 | 0 | 0 | 0.0155 |
| 11780 | 1997 | Ford F-350 | 0.2504 | 0.3742 | 0.2769 |
| 11781 | 1997 | Ford F-350 | 1.6448 | 0.6105 | 0.1438 |
| 11783 | 1997 | Ford F-350 | 0.1758 | 0.2076 | 0.1668 |
| 13333 | 2008 | Ford F-350 | 0 | 0 | 0.1051 |
| 13450 | 2008 | Ford F-350 | 0 | 0 | 0 |
| 13457 | 2008 | Ford F-350 | 0 | 0 | 0 |
| 13458 | 2008 | Ford F-350 | 0 | 0 | 0 |

*** No miles traveled in system during the FY**

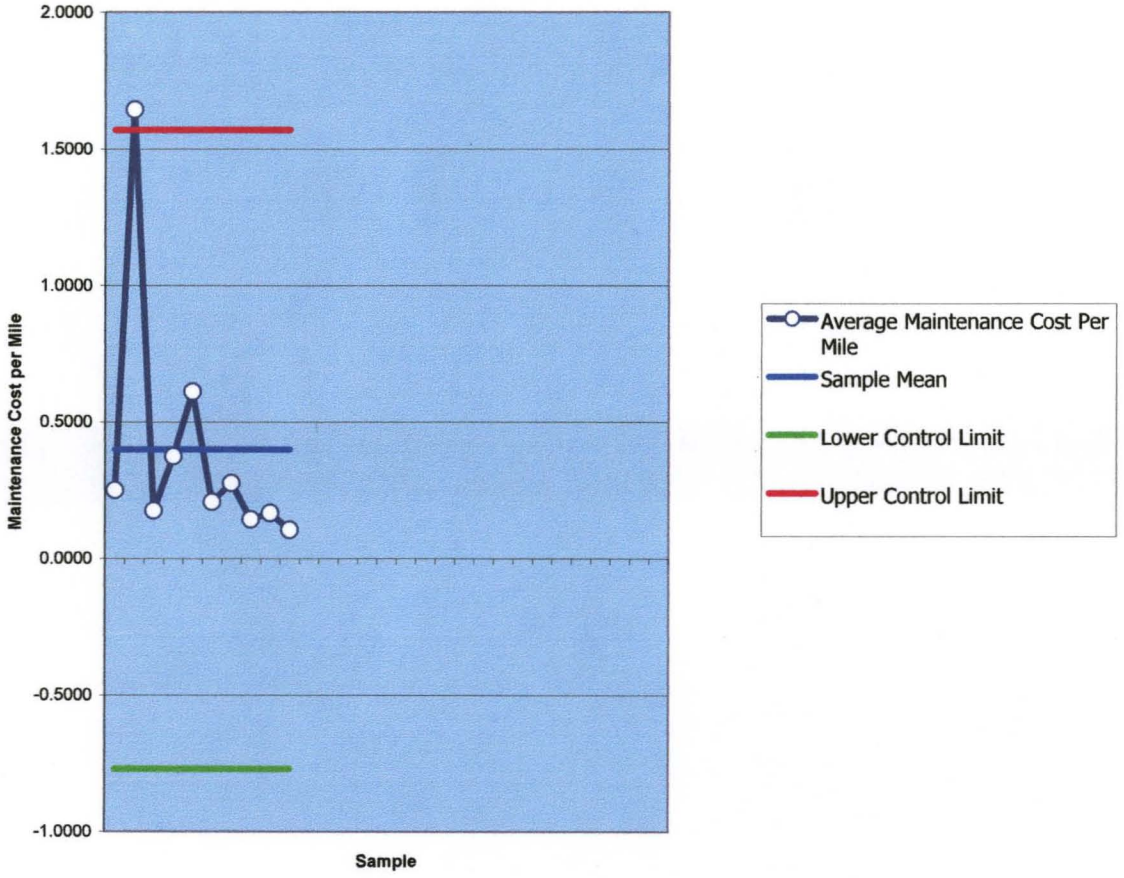
**Appendix F**
**F-150 Maintenance Cost per Mile (FY 2006 - FY 2008)**



**Appendix F**
**F-250 Maintenance Cost per Mile (FY 2006 - FY 2008)**



**Appendix F**
**F-350 Maintenance Cost per Mile (FY 2006 - FY 2008)**



## APPENDIX G
## 2008 SOUTHERN STATE FUEL EXPENDITURES

| | |
|---|---|
| **Kentucky** | **$789,134.79** |
| **South Carolina** | **$949,745.60** |
| **Alabama** | **$1,196,524.43** |
| **Mississippi** | **$1,346,164.00** |
| **Georgia** | **$1,382,526.00** |